LAGUNA SECA WETLAND PROJECT

SUMMARY OF THE LONG-TERM GROUNDWATER ANALYSIS AND RECOMMENDATIONS

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Santa Clara Valley Water District

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Introduction

This is a summary of the Santa Clara Valley Water District's (District) staff evaluation of long-term groundwater suitability for wetland restoration at the Laguna Seca site.

Limited opportunities to acquire stream and watershed lands to mitigate for impacts to wetlands from the Multi-Year Stream Maintenance Program (SMP) prompted District staff to look for alternatives to meet its mitigation requirements, including a proposal to restore a seasonal wetland at the Laguna Seca site. In August 2006, District staff initiated discussions with representatives from the U.S. Army Corps of Engineers, U. S. Environmental Protection Agency, California Department of Fish and Game, and San Francisco Bay Regional Water Quality Control Board on the possibility of restoring seasonal wetlands at the Laguna Seca site to help obtain the remaining wetland mitigation credit for the SMP. Recognizing a rare opportunity to restore a large historic wetland, regulatory agency staff concurred that the District should pursue the Laguna Seca Wetland Project.

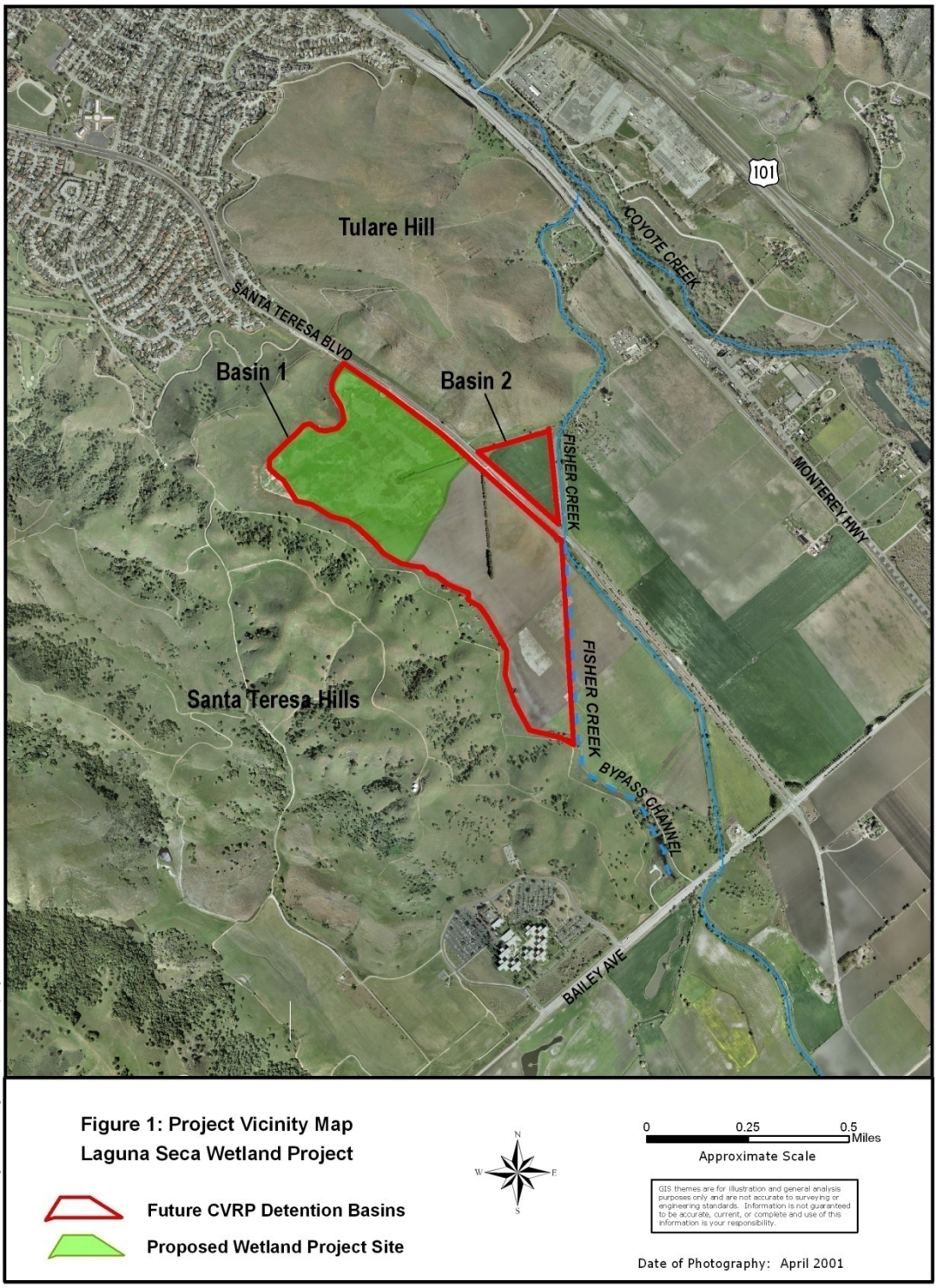
The planning phase of the proposed project was in progress when serious concerns were brought up by District staff regarding the reliability of groundwater to sustain a wetland in this location over the long-term. In April 2009, District staff proposed and regulatory agency staff agreed to put the project on hold for 2-3 years to allow the District to conduct further studies to more definitively determine the probability for long-term viability of restoration on this site. The additional time allowed for installation of shallow groundwater monitoring wells on site for collection of site-specific data to confirm existing conditions and to be used in modeling future groundwater conditions. The results of the modeling and evaluation of site restoration suitability are presented in this summary.

1. Background

The Laguna Seca Wetland Project was proposed to be located within the Coyote Valley Research Park's (CVRP) planned stormwater detention basin site. The site comprises two agricultural fields approximately one mile north of the intersection of Santa Teresa Boulevard and Bailey Avenue in the Coyote Valley area of San Jose (Figure 1). The proposed wetland project area was located in the northern part of Basin 1.

The proposed wetland project area is part of the larger, estimated 1,000-acre historical Laguna Seca wetland complex formed by the emergence of groundwater at the base of the Santa Teresa Hills. The historic wetland complex comprised extensive open water, tule marsh, and wet meadow habitats. Farming and attempts at reclamation and draining began in the mid-1800's followed by excavation of drainage ditches (including Fisher Creek) in the early 1900's and additional drainage, farming and filling continuing to the present. Despite these efforts, limited portions of the historic area, while cultivated, remain seasonally wet today.

The fields have historically been and continue to be routinely farmed. Crops are primarily grown during the warm, dry season. Portions of the fields are variably moist to flooded during the winter depending on rainfall amounts.


Tulare Hill
SANTA TERESA BLVD
Basin 1
Basin 2
COYOTE CREEK
101
FISHER CREEK
MONTEREY HWY
Santa Teresa Hills
FISHER CREEK BYPASS CHANNEL
BAILEY AVE
Figure 1: Project Vicinity Map
Laguna Seca Wetland Project
Future CVRP Detention Basins
Proposed Wetland Project Site
N
W
E
S
0
0.25
0.5
Miles
Approximate Scale
GIS themes are for illustration and general analysis purposes only and are not accurate to surveying or engineering standards. Information is not guaranteed to be accurate, current, or complete and use of this information is your responsibility.
Date of Photography: April 2001
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2. Groundwater Modeling Evaluation Results

District staff used a numeric groundwater flow model to simulate and forecast the groundwater conditions at the project site under two different operational scenarios. Available historical hydrology and information on groundwater levels, annual groundwater extraction and annual groundwater recharge were used in this evaluation.

Two model scenarios were formulated and simulated using the calibrated model. In the first scenario, Coyote Canal, designed to deliver releases from Anderson reservoir to Santa Clara Plain and the northern portions of Coyote Valley, is non-operational and there are no flow diversions from Coyote Creek through its Coyote Valley reach. This is the current condition.

The second model scenario uses all the same climatic and hydrologic conditions as the first scenario except Coyote Canal is returned to service during the dry season, thus limiting replenishment of the aquifer. This is the expected future condition. Flows are modeled to be diverted from Coyote Creek into the canal at the rates and times considered probable for future operations linked to requirements of the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE).

The findings of the model scenarios are summarized below:

Scenario 1 - Coyote Canal non-operational (current condition)

- Forecasted water table in Laguna Seca area fluctuates near land surface similar to the current conditions.
- Subbasin groundwater outflow is towards the northwest into the Santa Clara subbasin similar to the groundwater outflow under natural conditions.
- Seasonal return of groundwater derived baseflow into Fisher and Lower Coyote creeks is observed throughout the simulation period similar to the current groundwater conditions in the area.

Scenario 2 - Coyote Canal operational May – October of each year (expected future condition)

- Forecasted groundwater level declines as the simulation proceeds, with a maximum head decline of 30 feet observed.
- Subbasin groundwater outflow towards Santa Clara area decreases as the simulation proceeds.
- Reversed groundwater flow direction from Santa Clara to Coyote Valley is observed near the end of the simulation period.
- Seasonal return of groundwater derived baseflow into Fisher and Lower Coyote creeks is impacted. Seasonal return of groundwater derived baseflow into Fisher and Lower Coyote creeks is not observed starting 2012.

This modeling effort suggests the aquifer system responds markedly different to operation of Coyote Canal in the Laguna Seca area compared to when dry season flows are released into Coyote Creek.

The results indicate that groundwater level at the Project site would fluctuate near land surface under the current site conditions. During drought years, groundwater level would drop but would recover in a few years after a drought is over. As a result, under the existing site conditions, groundwater would be able to sustain the proposed wetland.

However, when stream flow in Coyote Creek is curtailed during summer months (either for cold-water fisheries management or re-operation of the Coyote Canal), groundwater level at the Project site would continually decline. Over time, a maximum groundwater level decline of 30 feet is projected. As a result, if stream flow in Coyote Creek is reduced for cold-water fisheries or because of re-operation of the Coyote Canal during the summer months, groundwater would not be able to support the proposed wetland.

3. Uncertainty Issues Affecting Groundwater Conditions and Project Implementation

Three major issues, described below, affect the implementation of the project. Two of the issues (a) lack of control of groundwater extraction in the Coyote Sub-basin, and (b) possible operational changes to water management in Coyote Sub-basin, increase the uncertainty regarding future groundwater conditions.

a. Lack of Control of Groundwater Extraction in the Coyote Sub-basin

The Coyote sub-basin has limited water supply, and new water sources are not available for future land development of the Coyote Valley. Additionally, the District does not have authority to regulate the amount of groundwater extraction by well owners. Groundwater extraction in the Coyote Sub-basin has increased significantly from an average of 6,500 acre-feet/year from 1988 to 2005 to approximately 13,600 acre-feet/year in 2009. District staff has estimated that the Coyote Sub-basin can sustain approximately 8,000 acre-feet/year of groundwater extraction given current recharge facilities and operation for the Coyote Sub-basin. Continual pumping of groundwater above the sustainable amount would lower the groundwater table in the Coyote Sub-basin, including the project site.

b. Possible Operational Changes to Water Management in Coyote Sub-basin

Two possible changes in management of water in Coyote Creek would have a significant effect on the water table at the Laguna Seca site. The first possible change is to curtail stream flow in Coyote Creek for cold-water fisheries management. The District, regulatory agencies and external stakeholders are currently in discussion regarding FAHCE management of water in Coyote Creek for cold-water fisheries. Conditions and requirements for cold-water fisheries will affect stream flow and recharge in Coyote Creek. One of the possible measures is to significantly cut back the amount of stream flow in Coyote Creek during the period of May to October each year. This projected condition was used to model Scenario 2 above.

The second possible change (likely concurrent to curtailment of stream flow for FAHCE) is the re-operation of the Coyote Canal. The District is considering re-using the Coyote Canal

to convey surface water to Santa Clara Basin. If this change is implemented, the amount of groundwater recharge via Coyote Creek will be significantly reduced, and the groundwater table at the project site will continue to decline. At this time, the District has not completed its evaluation of those two possible changes, and no timetable has been set on if and when one or both changes would be implemented.

c. Land Ownership

The Land Transfer and Maintenance Agreement (Agreement) dated February 20, 2001, between CVRP, City of San Jose, and District, states that upon completion of the flood protection improvements, including the detention basins, CVRP will transfer the ownership of those flood protection facilities to the District for operations and maintenance. In exchange, the District can restore wetland in the detention basins for mitigation of District's projects.

CVRP began construction of flood protection improvements in early 2007 and stopped construction in May 2008. CVRP contractor did not use the soil that meets the specifications that was agreed to with the District in building the Fisher Creek Bypass Levee. As a result, cracks have developed on the levee, and the levee presents a serious maintenance problem. Additionally, due in part to the downturn of the economy, CVRP did not construct the detention basins as it had agreed to. CVRP now has requested that the District accept the ownership and maintenance responsibility for the Fisher Creek Bypass Levee and construction responsibility for the detention basins if the District wants to have ownership of the detention basins for wetland restoration. The District does not agree with CVRP request because it does not comply with the terms of the Agreement and will place a significant financial burden on the District.

4. Recommendation

While current conditions remain favorable at the site, several issues introduce a high level of uncertainty regarding the ability of shallow groundwater to sustain a wetland restoration project at the Laguna Seca over the long-term. Issues include unregulated groundwater extraction in the Coyote Sub-basin, uncertainty around the schedule, requirements and implementation of the FAHCE's agreement on cold-water fisheries management in Coyote Creek and the re-operation of the Coyote Canal.

In order to continue meeting SMP mitigation requirements, it is recommended that the District:

a. Close out the proposed Laguna Seca Wetland Project and make the remaining funds available for acquisition of stream and watershed land for SMP mitigation.

b. Revisit the proposed wetland project when the District has determined that it does not have to curtail stream flow in Coyote Creek during summer months for cold-water fisheries management or re-operation of the Coyote Canal.